

IN THE CLAIMS

1. (Currently Amended) An encoding apparatus, comprising:  
a uniformly random number generating portion for generating uniformly random numbers; and  
an encoding portion for encoding each pixel value of an original picture signal based on a compared result of at least one threshold value that is set based on the uniformly random numbers and a pixel value of the original picture signal; and  
a transmission signal generating portion for adding a synchronous signal that includes a horizontal synchronous signal, a vertical synchronous signal, a sequential synchronous signal or the like.

2. (Currently Amended) An encoding apparatus, comprising:  
a uniformly random number generating portion for generating uniformly random numbers; and  
an encoding portion for encoding each pixel value of an original picture signal based on a compared result of at least one threshold value that is set based on the uniformly random numbers and a pixel value of the original picture signal;

~~The encoding apparatus as set forth in claim 1,~~  
wherein said encoding portion encodes each pixel value of the original picture signal a plurality of times, and

wherein said uniformly random number generating portion generates a different uniformly random number for encoding each pixel value of the original picture signal a plurality of times.

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3. (Original) The encoding apparatus as set forth in claim 1,  
wherein said encoding portion repeatedly encodes each of all pixel values in a predetermined range of the original picture signal, one pixel value at a time.

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4. (Original) The encoding apparatus as set forth in claim 3,  
wherein the predetermined range is one frame of the original picture signal.

5. (Original) The encoding apparatus as set forth in claim 2,  
wherein said encoding portion successively executes a process for successively encoding each pixel value in a predetermined range of the original picture signal a plurality of times.

6. (Original) The encoding apparatus as set forth in claim 5,  
wherein the predetermined range is one frame of the original picture signal.

7. (Original) The encoding apparatus as set forth in claim 1,  
wherein said encoding apparatus executes binarization of each pixel value of the original picture signal based on the threshold value.

8. (Original) The encoding apparatus as set forth in claim 1,  
wherein the threshold value is a value in a gradation range of the original picture  
signal.

9. (Original) The encoding apparatus as set forth in claim 1,  
wherein said at least one threshold value is a fixed number of values that depend  
on a predetermined original picture signal.

10. (Original) The encoding apparatus as set forth in claim 1,  
wherein the original picture signal is a digital picture signal.

11. (Currently Amended) A decoding apparatus for decoding an original  
picture signal from an encoded picture signal of which each pixel value of an original picture  
signal is encoded based on a compared result of a threshold value that is set based on a uniformly  
random number and a pixel value of the original picture signal, the encoded picture signal having  
an encoded value for each pixel value, comprising:

a cumulating portion for cumulating the encoded values of the encoded picture  
signal for each pixel value of the original picture signal; and

a decoding portion for decoding the encoded values cumulated by said cumulating  
portion for each pixel value of the original picture signal based on the number of times counted  
by a counting portion; and

a sampling portion for sampling the encoded values of the encoded picture signal.

12. (Currently Amended) A decoding apparatus for decoding an original picture signal from an encoded picture signal of which each pixel value of an original picture signal is encoded based on a compared result of a threshold value that is set based on a uniformly random number and a pixel value of the original picture signal, the encoded picture signal having an encoded value for each pixel value, comprising:

a cumulating portion for cumulating the encoded values of the encoded picture signal for each pixel value of the original picture signal;

a decoding portion for decoding the encoded values cumulated by said cumulating portion for each pixel value of the original picture signal based on the number of times counted by a counting portion; and

~~The decoding apparatus as set forth in claim 11, further comprising:~~

~~a sampling portion for sampling the encoded values of the encoded picture signal,~~

~~wherein said cumulating portion cumulates the encoded values sampled by said sampling portion.~~

13. (Original) The decoding apparatus as set forth in claim 12,

wherein said sampling portion variably sets a sampling period for which the encoded values are sampled.

14. (Currently Amended) A decoding apparatus for decoding an original picture signal from an encoded picture signal of which each pixel value of an original picture signal is encoded based on a compared result of a threshold value that is set based on a uniformly random number and a pixel value of the original picture signal, the encoded picture signal having an encoded value for each pixel value, comprising:

a cumulating portion for cumulating the encoded values of the encoded picture signal for each pixel value of the original picture signal;

a decoding portion for decoding the encoded values cumulated by said cumulating portion for each pixel value of the original picture signal based on the number of times counted by a counting portion; and

The decoding apparatus as set forth in claim 11, further comprising:

a controlling portion for causing said cumulating portion to stop cumulating the encoded values.

15. (Original) The decoding apparatus as set forth in claim 14,  
wherein said controlling portion causes said cumulating portion to stop  
cumulating the encoded values based on command information that is input by the user.

16. (Original) The decoding apparatus as set forth in claim 14,  
wherein said controlling portion causes said cumulating portion to stop  
cumulating the encoded values when the picture quality of the original picture signal decoded  
from the encoded values exceeds a predetermined reference value.

17. (Original) The decoding apparatus as set forth in claim 16,  
wherein said controlling portion determines that the picture quality exceeds the  
predetermined reference value when the counting portion has counted the predetermined number  
of times that said cumulating portion has cumulated each pixel of the original picture signal.

18. (Original) The decoding apparatus as set forth in claim 11,  
wherein said decoding portion decodes the original picture signal based on a  
predetermined gradation value that represent the number of gradation levels.

19. (Original) The decoding apparatus as set forth in claim 11,  
wherein the gradation value is variable.

20. (Original) The decoding apparatus as set forth in claim 11,  
wherein the original picture signal is a digital picture signal.

21. (Original) The decoding apparatus as set forth in claim 11,  
wherein the encoded values are binary values.

22. (Currently Amended) An encoding method, comprising the steps of:  
generating uniformly random numbers; ~~and~~  
encoding each pixel value of an original picture signal based on a compared result  
of at least one threshold value that is set based on the uniformly random numbers and a pixel  
value of the original picture signal; and

adding a synchronous transmission signal that includes a horizontal synchronous signal, a vertical synchronous signal, a sequential synchronous signal or the like.

23. (Original) A decoding method for decoding an original picture signal from an encoded picture signal of which each pixel value of an original picture signal is encoded based on a compared result of a threshold value that is set based on a uniformly random number and a pixel value of the original picture signal, the encoded picture signal having an encoded value for each pixel value, comprising the steps of:

cumulating the encoded values of the encoded picture signal for each pixel value of the original picture signal;

counting the number of times cumulated at the cumulating step; and

decoding the encoded values cumulated at the cumulating step for each pixel value of the original picture signal based on the number of times counted at the counting step.

24. (Currently Amended) A record medium from which a computer reads a program that causes the computer to perform the steps of:

generating uniformly random numbers; and

encoding each pixel value of an original picture signal based on a compared result of at least one threshold value that is set based on the uniformly random numbers and a pixel value of the original picture signal; and

adding a synchronous transmission signal that includes a horizontal synchronous signal, a vertical synchronous signal, a sequential synchronous signal or the like.

25. (Original) A record medium from which a computer reads a program that causes the computer to decode an original picture signal from an encoded picture signal of which each pixel value of an original picture signal is encoded based on a compared result of a threshold value that is set based on a uniformly random number and a pixel value of the original picture signal, the encoded picture signal having an encoded value for each pixel value, the program comprising the steps of:

cumulating the encoded values of the encoded picture signal for each pixel value of the original picture signal;

counting the number of times cumulated at the cumulating step; and

decoding the encoded values cumulated by said cumulating portion for each pixel value of the original picture signal based on the number of times counted at the counting step.

26. (Currently Amended) An encoding apparatus, comprising:  
a uniformly random number generating portion for generating uniformly random numbers; and

an encoding portion for encoding an original signal based on a compared result of at least one threshold value that is set based on the uniformly random numbers and each signal value of the original signal; and

a transmission signal generating portion for adding a synchronous signal that includes a horizontal synchronous signal, a vertical synchronous signal, a sequential synchronous signal or the like.



27. (Currently Amended) An encoding apparatus, comprising:  
a uniformly random number generating portion for generating uniformly random  
numbers; and  
an encoding portion for encoding an original signal based on a compared result of  
at least one threshold value that is set based on the uniformly random numbers and each signal  
value of the original signal;

~~The encoding apparatus as set forth in claim 26,~~

~~wherein each signal value of the original signal is encoded a plurality of times,~~

~~and~~

~~wherein said uniformly random number generating portion generates a different~~  
~~uniformly random number for encoding each signal value of the original signal a plurality of~~  
~~times.~~

28. (Original) The encoding apparatus as set forth in claim 26,

wherein said encoding portion repeatedly encodes each of all signal values in a  
predetermined range of the original signal, one signal value at a time.

29. (Original) A decoding apparatus for decoding an original signal from an  
encoded signal of which each signal value of an original signal is encoded based on a compared  
result of a threshold value that is set based on a uniformly random number and a signal value of  
the original signal, the encoded signal having an encoded value for each signal value,  
comprising:

a cumulating portion for cumulating the encoded values of the encoded signal for each signal value of the original signal;

a counting portion for counting the number of times cumulated; and

a decoding portion for decoding the encoded values cumulated by said cumulating portion for each signal value of the original signal based on the number of times counted by said counting portion.

30. (Currently Amended) An encoding method, comprising the steps of:

generating uniformly random numbers; and

encoding each signal value of an original signal based on a compared result of at

least one threshold value that is set based on the uniformly random numbers and each signal value that is an information unit of the original signal; and

adding a synchronous transmission signal that includes a horizontal synchronous signal, a vertical synchronous signal, a sequential synchronous signal or the like.

31. (Original) A decoding method for decoding an original signal from an

encoded signal of which each signal value of an original signal is encoded based on a compared result of a threshold value that is set based on a uniformly random number and a signal value of the original signal, the encoded signal having an encoded value for each signal value, comprising the steps of:

cumulating the encoded values of the encoded signal for each signal value of the original signal;

counting the number of times cumulated; and

decoding the encoded values cumulated at the cumulating step for each signal value of the original signal based on the number of times counted at the counting step.

32. (Currently Amended) A record medium from which a computer reads a program that causes the computer to perform the steps of:

generating uniformly random numbers; ~~and~~

encoding each signal value of an original signal based on a compared result of at least one threshold value that is set based on the uniformly random numbers and each signal value of the original signal; and

adding a synchronous transmission signal that includes a horizontal synchronous signal, a vertical synchronous signal, a sequential synchronous signal or the like.

33. (Original) A record medium from which a computer reads a program that causes the computer to decode an original signal from an encoded signal of which each signal value of an original signal is encoded based on a compared result of a threshold value that is set based on a uniformly random number and a signal value of the original signal, the encoded signal having an encoded value for each signal value, the program comprising the steps of:

cumulating the encoded values of the encoded signal for each signal value of the original signal;

counting the number of times cumulated; and decoding the encoded values cumulated at the cumulating step for each signal value of the original signal based on the number of times counted at the counting step.

34. (New) An encoding apparatus comprising:

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*Cl* a uniformly random number generating portion for generating uniformly random numbers; and

an encoding portion for encoding each pixel value of an original picture signal based on a compared result of at least one threshold value that is set based on the uniformly random numbers and a pixel value of the original signal;

wherein said encoding portion encodes each pixel value of the original picture signal a plurality of times.

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*cont* 35. (New) A decoding apparatus for decoding an original picture signal from an

encoded picture signal of which each pixel value of an original picture signal is encoded based on a compared result of a threshold value that is set based on a uniformly random number and a pixel value of the original picture signal, the encoded picture signal having an encoded value for each pixel value, comprising:

a cumulating portion for cumulating the encoded values of the encoded picture signal for each pixel value of the original picture signal;

a counting portion for counting the number of times cumulated at the cumulating portion; and

a decoding portion for decoding the encoded values cumulated by said cumulating portion for each pixel value of the original picture signal based on the number of times counted by a counting portion.

36. (New) A decoding apparatus for decoding an original picture signal from an encoded picture signal of which each pixel value of an original picture signal is encoded based on a compared result of a threshold value that is set based on a uniformly random number and a pixel value of the original picture signal, the encoded picture signal having an encoded value for each pixel value, comprising:

a cumulating portion for cumulating the encoded values of the encoded picture signal for each pixel value of the original picture signal;

a counting portion for outputting the number of times cumulated at the cumulating portion; and

a decoding portion for decoding the encoded values cumulated by said cumulating portion for each pixel value.

37. (New) An encoding method comprising the steps of:

generating uniformly random numbers; and

encoding each pixel value of an original picture signal based on a compared result of at least one threshold value that is set based on the uniformly random numbers and a pixel value of the original signal;

wherein each pixel value of the original picture signal is encoded a plurality of times.

38. (New) A record medium from which a computer reads a program that causes the computer to perform the steps of:

generating uniformly random numbers; and

encoding each pixel value of an original picture signal based on a compared result of at least one threshold value that is set based on the uniformly random numbers and a pixel value of the original picture signal;

wherein each pixel value of the original picture signal is encoded a plurality of times.

39. (New) A decoding method for decoding an original picture signal from an encoded picture signal of which each pixel value of an original picture signal is encoded based on a compared result of a threshold value that is set based on a uniformly random number and a pixel value of the original picture signal, the encoded picture signal having an encoded value for each pixel value, comprising the steps of:

cumulating the encoded values of the encoded picture signal for each pixel value of the original picture signal;

counting the number of times cumulated at the cumulating step;

outputting the number of times cumulated; and

decoding the encoded values cumulated at the cumulating step for each pixel value of the original picture signal based on the number of times counted at the counting step.